**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
ON APPEAL FROM THE EXAMINER TO THE BOARD
OF PATENT APPEALS AND INTERFERENCES**

In re Application of:	David G. Way
Serial No:	10/041,853
Date Filed:	January 7, 2002
Group Art Unit:	2613
Examiner:	Nathan M. Curs
Confirmation No.	5513
Title:	SELECTABLE DISPERSION ENHANCEMENT

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

APPEAL BRIEF

Appellant has appealed to this Board from the decision of the Examiner, contained in a Final Office Action mailed May 11, 2006 ("*Final Office Action*") and the Advisory Action mailed July 28, 2006 ("*Advisory Action*"), finally rejecting Claims 1-9 and 11-20. Appellant filed a Notice of Appeal on August 10, 2006. Appellant respectfully submits this Appeal Brief for consideration of the Board.

TABLE OF CONTENTS

REAL PARTY IN INTEREST

The real party in interest for this Application under appeal is Fujitsu Limited.

RELATED APPEALS AND INTERFERENCES

The Appellant, the undersigned Attorney for Appellant, and the Assignee know of no applications on appeal that may directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

STATUS OF CLAIMS

Claims 1-9 and 11-20 were rejected by the *Final Office Action*. Appellant presents all pending claims for appeal – Claims 1-9 and 11-20 – and sets forth these claims in Appendix A.

STATUS OF AMENDMENTS

The claims on appeal and which appear in Appendix A of this Appeal Brief represent the form of the claims as of the time of the *Final Office Action* dated May 11, 2006. Appellant filed no amendments to the claims after the *Final Office Action*.

SUMMARY OF CLAIMED SUBJECT MATTER

An optical communication system (10) includes optical network nodes (12) interlinked using optical fibers (14). *Specification*, Figure 1; *id.* at p. 6, ll. 2-4. In particular embodiments, one or more of the network nodes may include a dispersion enhancement module (DEM) (16) for enhancing dispersion of signals received on an optical fiber to a level compensated for by a node's dispersion compensation module (DCM) (18). *Id.* at Figure 1; *id.* at p. 6, ll. 4-8. While the DCM may provide a fixed amount of negative dispersion, the DEM may provide varying amounts of positive dispersion using one or more dispersion enhancement fibers. *Id.* at p. 6, ll. 19-28; p. 9, ll. 20-26. Thus, a network node's DEM and DCM may work together to cancel dispersion in received optical signals. *Id.*

For example, consider a network node including a DCM designed to compensate for dispersion caused by one hundred fifty kilometers of optical fiber, but the node receives a signal sent through only one hundred kilometers of optical fiber. *Id.* at p. 7, ll. 14-28. If the node has no DEM, then the node's DCM may overcompensate for the dispersion in the optical fiber, which can disrupt signals as severely as having little or no dispersion compensation. *Id.* However, through appropriate selections, a DEM may be configured to increase the dispersion of optical signals received from the fiber such that they have dispersion as if affected by one hundred fifty kilometers of optical fiber. *Id.* Thus, in this example, DEM should provide an increase in dispersion equal to the amount of dispersion resulting from fifty kilometers of optical fiber, and, together, the node's DEM and DCM may cancel dispersion in received optical signals. *Id.*

A. Claim 1 - Independent

A dispersion compensation system comprising:

a dispersion compensation module (DCM) operable to receive optical input and provide optical output having a negative dispersion relative to the optical input; and

a dispersion enhancement module (DEM) adapted to be optically coupled between the DCM and an optical fiber having a positive dispersion, the DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts and to provide the optical input to the DCM, the optical input having a positive dispersion

substantially equal to the positive dispersion of the optical fiber plus the selected one of the amounts of dispersion in the DEM.

See, e.g., Figure 1 (14, 16, 18), Figure 2 (12, 14, 16, 18), Figure 3 (52, 54, 56), and Figure 4 (steps 84-92) and specification 6:19-28, 7:9-8:12, 8:24-9:26, 9:27-10:20, 10:24-29, 11:9-12, and 13:19-14:21.

B. Claim 9 - Independent

A method for dispersion compensation comprising:

providing an optical transport fiber coupling a first network element and a second network element, the transport fiber having a first positive dispersion;

providing a dispersion enhancement module disposed between the transport fiber and the second network element;

determining a negative dispersion of the second network element; and

configuring the dispersion enhancement module to provide second positive dispersion, the sum of the first positive dispersion and the second positive dispersion substantially equal to the magnitude of the negative dispersion, whereby configuring the dispersion enhancement module comprises routing optical signals from the transport fiber though one or more dispersion enhancement fibers.

See, e.g., Figure 1 (12, 14, 16, 18), Figure 2 (12, 14, 16, 18), Figure 3 (52, 54, 56), and Figure 4 (steps 80-92) and specification 6:9-28, 7:9-8:12, 8:24-9:26, 9:27-10:20, 10:24-29, 11:9-12, and 13:9-14:21.

C. Claim 13 - Independent

A dispersion compensation system comprising:

a first optical amplifier;

a second optical amplifier;

a dispersion compensation fiber optically coupled between the first optical amplifier and the second optical amplifier, the dispersion compensation fiber operable to receive optical input from the first optical amplifier and provide optical output to the second optical amplifier, the optical output having a negative dispersion relative to the optical input; and

a dispersion enhancement module (DEM) adapted to be optically coupled between the first optical amplifier and an optical fiber having a positive dispersion, the DEM operably

including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts and to provide the optical input to the first optical amplifier, the optical input having a positive dispersion substantially equal to the positive dispersion of the optical fiber plus the selected one of the amounts of dispersion in the DEM.

See, e.g., Figure 1 (14, 16, 18), Figure 2 (12, 14, 16, 18, 36, 38), Figure 3 (52, 54, 56), and Figure 4 (steps 84-92) and specification 6:19-28, 7:9-8:12, 8:24-9:26, 9:27-10:20, 10:24-29, 11:9-12, and 13:19-14:21.

D. Claim 16 - Independent

A dispersion enhancement module adapted to be optically coupled to a dispersion compensation module having a fixed negative dispersion, the dispersion enhancement module comprising:

an optical input adapted to couple to an optical transport fiber;

an optical output adapted to couple to the dispersion compensation module;

a plurality of dispersion enhancement fibers; and

a plurality of optical switches coupling the optical input and the dispersion enhancement fibers, the optical switches operable to form an optical path between the optical input and the optical output, the optical path passing through one or more of the dispersion enhancement fibers, wherein optical signals from the optical output have a positive dispersion substantially equal to a sum of positive dispersion of the transport fiber and positive dispersion of the optical path.

See, e.g., Figure 1 (14, 16, 18), Figure 2 (12, 14, 16, 18, 30, 32, 34), Figure 3 (50, 52, 54, 56, 58, 60), and Figure 4 (steps 84-92) and specification 6:19-28, 7:9-8:12, 8:24-9:26, 9:27-10:20, 10:21-12:3, and 13:19-14:21.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Appellant requests that the Board review the Examiner's rejection of Claims 1-9, 11, 13-17, 19, and 20 under 35 U.S.C. § 103(a) as unpatentable based on the proposed combination of U.S. Patent No. 6,654,564 issued to Colbourne et al. ("*Colbourne*"), U.S. Patent No. 5,608,562 issued to Delavaux et al. ("*Delavaux*"), and U.S. Patent No. 6,456,773 issued to Keys ("*Keys*").

II. Appellant requests that the Board review the Examiner's rejection of Claims 12 and 18 under 35 U.S.C. § 103(a) as unpatentable based on the proposed combination of *Colbourne*, *Delavaux*, *Keys*, and U.S. Patent Application Publication No. 2003/0031433 issued to Feinberg ("*Feinberg*").

ARGUMENT

A. Claims 1-9, 11, 13-17, 19, and 20 are patentable because the proposed *Colbourne-Delavaux-Keys* combination fails to teach or suggest all elements of the claims and the proposed combination is improper.

The Examiner rejects Claims 1-9, 11, 13-17, 19, and 20 under 35 U.S.C. §103(a) as unpatentable based on a proposed combination of U.S. Patent No. 6,654,564 issued to Colbourne et al. ("*Colbourne*"), U.S. Patent No. 5,608,562 issued to Delavaux et al. ("*Delavaux*"), and U.S. Patent No. 6,456,773 issued to Keys ("*Keys*"). To establish a *prima facie* case of obviousness, there must be a suggestion or motivation in the prior art to modify or combine the references, and the combination of reference must teach or suggest all elements of the rejected claims. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). The Examiner's rejection of Claims 1-9, 11, 13-17, 19, and 20 under 35 U.S.C. § 103 fails both of these requirements. First, even if the combination were proper, the proposed *Colbourne-Delavaux-Keys* combination fails to teach or suggest all elements of the claims. Second, there is no suggestion or motivation to modify or combine the references and the rejection under § 103 is improper because the cited references teach away from the claims and/or other cited references.

1. The *Colbourne-Delavaux-Keys* combination fails to teach or suggest all elements of Claims 1-9, 11, 13-17, 19, and 20.

Consider Claim 1, which recites:

> A dispersion compensation system comprising:
>
> a dispersion compensation module (DCM) operable to receive optical input and provide optical output having a negative dispersion relative to the optical input; and
>
> a dispersion enhancement module (DEM) adapted to be optically coupled between the DCM and an optical fiber having a positive dispersion, the DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts and to provide the optical input to the DCM, the optical input having a positive dispersion substantially equal to the positive dispersion of the optical fiber plus the selected one of the amounts of dispersion in the DEM.

Appellant respectfully submits that *Colbourne*, *Delavaux*, and *Keys*, whether taken alone or in combination, fail to teach or suggest all elements of Claim 1, and therefore the Examiner's rejection under § 103 based on the *Colbourne*, *Delavaux*, and *Keys* combination must fail. Among other elements, *Colbourne*, *Delavaux*, and *Keys* fail to teach or suggest a dispersion enhancement module (DEM) operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts.

In general, *Keys* discloses a dispersion compensation module that has one or more spools of dispersion compensating fiber. *Keys*, Abstract. Because "optical signals propagating through transmission optical fiber experience a positive dispersion," *Keys* teaches coupling selected spools of dispersion compensating fiber "to the transmission optical fiber in order to offset the chromatic dispersion." *Id.* at col. 1, ll. 31-37.

Similarly, *Delavaux* generally teaches a different method of compensating for dispersion. *Delavaux*, Abstract. *Delavaux*'s system uses adjustable dispersion compensating fibers to compensate for the dispersion in system fibers. *Id.* *Delavaux*'s dispersion compensation unit 9 "introduces an amount of dispersion that compensates for the dispersion in [system optical] fibers 11 and 13." *Id.* at col. 2, l. 64 - col. 3, l. 2; *id.* at Figure 1.

Generally, *Colbourne* describes a tunable dispersion compensator that is able to offset dispersion of an optical signal. *Colbourne*, Abstract. In order to compensate for dispersion, *Colbourne* teaches using optical filters, rather than dispersion compensation fibers, and specifically points out the disadvantages of using dispersion compensation fibers. *Id.* at col. 9, ll. 11-16. *Colbourne*'s dispersion compensator can compensate for dispersion in a wave division multiplexing (WDM) system. *Id.* at col. 1, ll. 55-57. *Colbourne* discloses that "dispersion in a de-interleaved optical signal is periodic and not just linear across the entire band of wavelengths of interest" and that "a GT etalon has a substantially opposite dispersion characteristic that is periodic." *Id.* at col. 8, ll. 61-66. Accordingly, by matching the two periodic characteristics, *Colbourne* achieves "simultaneous compensation over a group of channels or wavelength bands of interest." *Id.* at col. 8, l. 66 - col. 9, l. 2.

Claim 1 requires "a dispersion compensation module (DCM)" and "a dispersion enhancement module (DEM) . . . the DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by

the optical fiber by a selected one of a plurality of amounts." The proposed *Colbourne-Delavaux-Keys* combination fails to teach or suggest these claimed aspects.

As teaching the claimed aspects, the Examiner relies on *Colbourne*, *Delavaux*, and *Keys*. *Final Office Action*, pp. 2-3. The Examiner admits that *Colbourne* fails to teach or suggest "the dispersion enhancement module comprising a plurality of dispersion enhancement fibers." *Final Office Action*, p. 2. In response to arguments previously submitted by Appellant, the Examiner correctly notes, "The examiner did not state that Colbourne fails to teach or suggest any aspects of the dispersion enhancement module. In fact, Colbourne does teach a dispersion enhancement module." *Final Office Action*, pp. 11-12 (emphasis omitted). Even assuming, for the sake of argument, that *Colbourne* teaches or suggests a dispersion enhancement module of some sort, the proposed combination of references still fails to teach or suggest a dispersion enhancement module "operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion by a selected one of a plurality of amounts," as required by the claim. Thus, because the Examiner agrees that *Colbourne* fails to teach or suggest that the dispersion enhancement module operably includes a plurality of dispersion enhancement fibers (*Final Office Action*, pp. 2-3), the Examiner must rely on either *Delavaux* or *Keys* to teach or suggest these claimed aspects. However, *Delavaux* and *Keys*, whether taken alone or in combination, fail to teach or suggest any dispersion enhancement module, much less one including a dispersion enhancement fiber, and certainly not one "operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts."

Delavaux and *Keys* teach two alternative methods for providing a dispersion compensation module. *Delavaux*, in general, discloses a dispersion compensation unit (element 9 in Figures 1 and 2) that includes multiple strands of dispersion compensated fiber. *See, e.g., Delavaux*, Figs. 5 and 6. *Delavaux* teaches that each of the dispersion compensation fibers has a <u>negative</u> dispersion relative to a system fiber. *Delavaux*, col. 1, ll. 37-38. However, Claim 1 requires a dispersion enhancement module operably including a plurality of dispersion enhancement fibers and operable to selectively increase the <u>positive</u> dispersion provided by the optical fiber. *Delavaux* fails to teach or suggest these claimed aspects.

Similar to *Delavaux*, *Keys* discloses a technique by which a dispersion compensation module can be constructed to provide a desired level of dispersion compensation. In *Keys*'s alternative technique, *Keys* uses individual packages of dispersion compensation fiber, with each package having a set amount of dispersion compensation fiber (DCF). While *Keys* may disclose that "[s]ome of the DCF segments have a positive dispersion," *Keys* teaches that "[s]elected DCF segments are coupled to one another to provide a desired net dispersion to offset the dispersion associated with the transmission optical fiber." *Keys*, col. 1, ll. 59-63 (emphasis added). Thus, *Keys* fails to teach or suggest a dispersion enhancement module operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber, as required by Claim 1.

Accordingly, *Delavaux* and *Keys* fail to teach or suggest a "DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts," as required by Claim 1. Rather, these references simply provide two alternate techniques for providing a dispersion compensation module that implements a set amount of negative dispersion.

Therefore, *Colbourne*, *Delavaux*, and *Keys*, whether taken alone or in combination, fail to teach or suggest every element of Claim 1. Likewise, independent Claims 9, 13, and 16 include limitations that, for substantially similar reasons, are not taught or suggested by the references. Because *Colbourne*, *Delavaux*, and *Keys*, whether taken alone or in combination, fail to teach or suggest every element of independent Claims 1, 9, 13, and 16, Appellant respectfully requests the Board to reverse the Examiner's rejection of Claims 1, 9, 13, and 16 and their dependent claims, and direct the Examiner to issue a notice of allowance.

2. There is no suggestion or motivation to modify or combine the references and the rejection under § 103 is improper because the cited references teach away from the claims and/or other cited references.

The proposed combination is improper, as there is no teaching, suggestion, or motivation to combine or modify the teachings of the cited references either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. While "evidence of a suggestion, teaching, or motivation . . . may flow from the prior art references

themselves, the knowledge of one of ordinary skill in the art, or, in some cases, the nature of the problem to be solved, ... [t]he range of sources available . . . does not diminish the requirement for actual evidence." *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999).

In fact, the references actually teach away from the proposed combination. If a reference teaches away from the claims or another reference, then the use of that reference under § 103 is improper. *In re Kumar*, 418 F.3d 1361, 1368, 76 U.S.P.Q.2d 1048, 1052 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 65 U.S.P.Q.2d 1379 (Fed. Cir. 2003). First, Appellant respectfully submits that *Colbourne* teaches away from the claims. Also, *Delavaux* and *Keys* teach away from a combination with each other. Thus, the use of these references in constructing a *prima facie* obviousness rejection is improper.

a. *Colbourne* teaches away from the proposed combination, and, thus, the use of *Colbourne* under § 103 is improper.

Appellant's independent Claim 1, for example, requires "a dispersion enhancement module . . . operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts." However, *Colbourne* teaches away from these claimed aspects.

Colbourne expressly teaches away from the use of dispersion compensation fibers. Rather than using dispersion compensation fibers, *Colbourne* proposes the use of optical filters. *Colbourne*, Abstract. Moreover, *Colbourne* discourages the use of dispersion compensation fibers:

> There are two surprising aspects to this invention. Firstly, the inventors have discovered that <u>dispersion in a de-interleaved optical signal is periodic</u> and not just linear across the entire band of wavelengths of interest. Secondly, is the discovery, that <u>a GT etalon has a substantially opposite dispersion characteristic that is periodic</u>; by selecting the period to match that of the interleaver, simultaneous compensation over a group of channels or wavelength bands of interest can be realized. Furthermore, by using a multiple cavity device whereon the cavities have the same period or multiples thereof, dispersion compensation and channel width can be controlled.
>
> The advantage of the utilizing the device in accordance with the invention to compensate for a fixed repeated dispersion in for example an output signal received from a multiplexor [sic] suffering from periodically repeated dispersion characteristics is evident after viewing FIGS. 2 through 6. <u>However, the invention can provide other unexpected advantages.</u> Dispersion compensators such as dispersion compensating fiber can be used for providing a <u>fixed</u> negative or positive dispersion for optical fibres [sic]. <u>However,</u>

> dispersion compensating fiber cannot compensate for the wavelength dependence of dispersion.

Id., col. 8, l. 61 - col. 9, l. 16 (emphasis added). Therefore, *Colbourne* identifies his invention as having an advantage over a system that relies upon dispersion compensation fibers and criticizes the use of dispersion compensating fiber.

Colbourne's teaching away from the claims rebuts the asserted *prima facie* case of obviousness under § 103. *In re Peterson*, 315 F.3d 1325, 65 U.S.P.Q.2d 1379 (Fed. Cir. 2003). *Colbourne* teaches away because "a person of ordinary skill, upon reading the reference, . . . would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 31 U.S.P.Q.2d 1130 (Fed. Cir. 1994). "Known disadvantages in old devices which would naturally discourage search for new inventions may be taken into account in determining obviousness." *United States v. Adams*, 383 U.S. 39, 52, 148 U.S.P.Q. 479, 484 (1966).

Therefore, *Colbourne* teaches away from Claim 1. Also, *Colbourne* teaches away from independent Claims 9, 13, and 16 for substantially similar reasons. Because *Colbourne* teaches away from limitations of Claims 1, 9, 13, and 16, the use of *Colbourne* under § 103 is improper. For at least this reason, Appellant respectfully requests the Board to reverse the Examiner's rejection of Claims 1, 9, 13, and 16 and their dependent claims and direct the Examiner to issue a notice of allowance.

b. *Delavaux* and *Keys* teach away from a combination with each other, and, thus, the combination of *Delavaux* and *Keys* under § 103 is improper.

Delavaux and *Keys*, as discussed above, teach alternate techniques for accomplishing a similar end result. One of skill in the art would not be motivated to pick and choose different aspects of these two alternates, but rather would be inclined to select only one of the two.

With regard to Claim 1, for example, the Examiner argues for combining *Colbourne* with *Delavaux*'s adjustable dispersion compensating fibers. *Final Office Action*, p. 3. Then, the Examiner argues adding *Keys*'s various segments of dispersion compensating fibers to the proposed *Colbourne-Delavaux* combination. *Id.* However, the Examiner fails to provide a compelling explanation of why (and evidence that) one of ordinary skill in the art would be motivated to combine the alternative techniques of *Delavaux* and *Keys*. *See id.* In order to establish a *prima facie* case of obviousness, there must be some suggestion or motivation,

either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999)

In response to Appellant's previously submitted arguments, the *Final Office Action* argues that *Delavaux* and *Keys* are, in fact, properly combinable because "[t]he combination is based on modifying the dispersion compensators of Colbourne based on a dispersion compensator teaching from Delavaux and another dispersion compensator teaching from Keys." *Final Office Action*, p. 13. However, even assuming, for the sake of argument that it would have been obvious both to combine *Delavaux* with *Colbourne* and to combine *Keys* with *Colbourne*, it still would not have been obvious to combine *Delavaux* and *Keys* in the same device.

For at least this reason, the proposed *Colbourne-Delavaux-Keys* combination is improper. Accordingly, Appellant respectfully requests the Board to reverse the Examiner's rejection of Claims 1-9, 11, 13-17, 19, and 20 and direct the Examiner to issue a notice of allowance.

B. Claims 12 and 18 are patentable because the proposed *Colbourne-Delavaux-Keys-Feinberg* combination fails to teach or suggest all elements of the claims.

The Examiner rejects Claims 12 and 18 under 35 U.S.C. § 103(a) as unpatentable based on the proposed combination of *Colbourne*, *Delavaux*, *Keys*, and U.S. Patent Application Publication No. 2003/0031433 issued to Feinberg ("*Feinberg*").

As described above, Appellant has shown that *Colbourne*, *Delavaux*, and *Keys*, whether taken alone or in combination, fail to teach or suggest all limitations of independent Claims 9 and 16. Accordingly, the proposed *Colbourne-Delavaux-Keys* combination fails to teach or suggest all limitations of Claims 12 and 18 because these dependent claims incorporate the limitations of their respective independent claims. *Feinberg* fails to remedy the deficiencies of the proposed *Colbourne-Delavaux-Keys* combination.

For at least this reason, *Colbourne*, *Delavaux*, *Keys*, and *Feinberg*, whether taken alone or in combination, fail to teach or suggest all limitations of Claims 12 and 18. Because the references fail to teach all limitations of the claims, Appellant respectfully requests the

Board to reverse the Examiner's rejection of Claims 12 and 18 and direct the Examiner to issue a notice of allowance.

CONCLUSION

Appellant has demonstrated that the present invention, as claimed in Claims 1-9 and 11-20, is patentably distinct from the cited art. Accordingly, Appellant respectfully requests that the Board reverse the final rejection and instruct the Examiner to issue a Notice of Allowance of Claims 1-9 and 11-20.

The Commissioner is hereby authorized to charge $500.00 for the filing fee to Deposit Account No. 02-0384 of Baker Botts L.L.P. The Commissioner is hereby authorized to charge any extra fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

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Appendix A: Claims Involved In Appeal

1. (Previously Presented) A dispersion compensation system comprising:

a dispersion compensation module (DCM) operable to receive optical input and provide optical output having a negative dispersion relative to the optical input; and

a dispersion enhancement module (DEM) adapted to be optically coupled between the DCM and an optical fiber having a positive dispersion, the DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts and to provide the optical input to the DCM, the optical input having a positive dispersion substantially equal to the positive dispersion of the optical fiber plus the selected one of the amounts of dispersion in the DEM.

2. (Original) The dispersion compensation system of Claim 1, wherein a magnitude of the positive dispersion of the optical input is substantially equal to a magnitude of the negative dispersion of the DCM, such that the optical output has a dispersion near to zero.

3. (Original) The dispersion compensation system of Claim 1, wherein the DCM is designed to compensate for dispersion along a fixed length of an optical fiber type, the optical fiber type having a positive dispersion per unit length; and

wherein, if the optical fiber coupled to the DEM has an actual length less than the fixed length, the selected amount of dispersion in the DEM increases dispersion by an amount substantially equal to dispersion resulting from a length of the optical fiber type equal to the difference of the fixed length and the actual length.

4. (Original) The dispersion compensation system of Claim 1, wherein the DCM is disposed between a first optical amplifier and a second optical amplifier, the first optical amplifier optically coupled to the DEM and operable to receive the optical input from the DEM, to optically amplify the optical input, and to provide the amplified optical input to the DCM.

5. (Original) The dispersion compensation system of Claim 1, wherein the DCM comprises dispersion compensation fiber having a defined negative dispersion per unit length.

6. (Previously presented) The dispersion compensation system of Claim 1, wherein each of the plurality of dispersion enhancement fibers further comprises a defined positive dispersion per unit length, each of the dispersion enhancement fibers having a different length.

7. (Previously presented) The dispersion compensation system of Claim 1, wherein the DEM is operable to selectively couple one or more of the dispersion enhancement fibers together to form an optical path coupling the optical fiber to the DCM through the selected one or more of the dispersion enhancement fibers.

8. (Original) The dispersion compensation system of Claim 1, wherein the DEM comprises a controller operable to:

determine the negative dispersion of the DCM;

determine the positive dispersion of the optical fiber; and

determine the selected one of the amounts of dispersion in the DEM to provide the optical input having a positive dispersion substantially equal to an inverse of the negative dispersion of the DCM.

9. (Previously presented) A method for dispersion compensation comprising:

providing an optical transport fiber coupling a first network element and a second network element, the transport fiber having a first positive dispersion;

providing a dispersion enhancement module disposed between the transport fiber and the second network element;

determining a negative dispersion of the second network element; and

configuring the dispersion enhancement module to provide second positive dispersion, the sum of the first positive dispersion and the second positive dispersion substantially equal to the magnitude of the negative dispersion, whereby configuring the dispersion enhancement module comprises routing optical signals from the transport fiber though one or more dispersion enhancement fibers.

10. (Canceled)

11. (Original) The method Claim 9, wherein the negative dispersion in the second network element results from dispersion compensation fiber having a defined negative dispersion per unit length.

12. (Original) The method of Claim 9, further comprising:

detecting a switch from the transport fiber to a backup optical transport fiber, the backup transport fiber having a third positive dispersion; and

reconfiguring the dispersion enhancement module to provide fourth positive dispersion, the sum of the third positive dispersion and the fourth positive dispersion substantially equal to the magnitude of the negative dispersion.

13. (Previously Presented) A dispersion compensation system comprising:

a first optical amplifier;

a second optical amplifier;

a dispersion compensation fiber optically coupled between the first optical amplifier and the second optical amplifier, the dispersion compensation fiber operable to receive optical input from the first optical amplifier and provide optical output to the second optical amplifier, the optical output having a negative dispersion relative to the optical input; and

a dispersion enhancement module (DEM) adapted to be optically coupled between the first optical amplifier and an optical fiber having a positive dispersion, the DEM operably including a plurality of dispersion enhancement fibers and operable to selectively increase the positive dispersion provided by the optical fiber by a selected one of a plurality of amounts and to provide the optical input to the first optical amplifier, the optical input having a positive dispersion substantially equal to the positive dispersion of the optical fiber plus the selected one of the amounts of dispersion in the DEM.

14. (Previously presented) The dispersion compensation system of Claim 13, wherein each of the plurality of dispersion enhancement fibers further comprises a defined positive dispersion per unit length, each of the dispersion enhancement fibers having a different length.

15. (Previously presented) The dispersion compensation system of Claim 13, wherein the DEM is operable to selectively couple one or more of the dispersion enhancement fibers together to form an optical path coupling the optical fiber to the DCM through the selected one or more of the dispersion enhancement fibers.

16. (Original) A dispersion enhancement module adapted to be optically coupled to a dispersion compensation module having a fixed negative dispersion, the dispersion enhancement module comprising:

an optical input adapted to couple to an optical transport fiber;

an optical output adapted to couple to the dispersion compensation module;

a plurality of dispersion enhancement fibers; and

a plurality of optical switches coupling the optical input and the dispersion enhancement fibers, the optical switches operable to form an optical path between the optical input and the optical output, the optical path passing through one or more of the dispersion enhancement fibers, wherein optical signals from the optical output have a positive dispersion substantially equal to a sum of positive dispersion of the transport fiber and positive dispersion of the optical path.

17. (Original) The dispersion enhancement module of Claim 16, wherein a magnitude of the positive dispersion of the optical signals is substantially equal to a magnitude of the negative dispersion of the dispersion compensation module.

18. (Original) The dispersion enhancement module of Claim 16, further comprising a controller operable to:

detect a switch from the optical transport fiber to a backup optical transport fiber;

determine a difference in magnitudes of the negative dispersion of the dispersion compensation module and a positive dispersion of the backup optical transport fiber; and

reconfigure the optical switches such that the optical path has a positive dispersion equal to the difference in the magnitudes.

19. (Original) The dispersion enhancement module of Claim 16, further comprising a controller operable to:

determine the negative dispersion of the dispersion compensation module;

determine the positive dispersion of the optical transport fiber; and

configure the switches such that a magnitude of the positive dispersion of the optical signals from the optical output is substantially equal to a magnitude of the negative dispersion of the dispersion compensation module.

20. (Original) The dispersion enhancement module of Claim 16, wherein the switches are further operable to optically couple the optical input and the optical output such that the optical path bypasses the dispersion enhancement fibers.

Appendix B: Evidence

NONE

Appendix C: Related Proceedings

NONE